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COTTON INSECT CONDITIONS FOR WEEK ENDING JUNE 23, 1950
(Fourth Cotton Insect Survey Report for 1950)

In general the boll weevil situation continues to improve. Hot, dry weather during the early part of the week was beneficial in holding down weevil infestations in many areas. However, general rains and cool weather in the cotton areas from Texas and Oklahoma to Virginia the latter part of the week were favorable for weevil development.

Cotton leafworms are apparently more abundant and causing more damage in southern Texas than during any June since 1943. Heavy leafworm infestations are reported in parts of Cameron County, Texas and in the eastern portion of the cotton area of Mexico immediately south of the Lower Rio Grande Valley. Insecticides are being used in most of the heavily infested fields on the Texas side of the river. Leafworms in sufficient number to demand insecticide control have been reported as far north as Corpus Christi in Nueces County.

Insecticides are being used more extensively for cotton insect control than during June in any previous year. The only serious shortage has been reported from the Lower Rio Grande Valley, where for several weeks there has not been sufficient calcium arsenate or toxaphene available to meet the needs of the cotton growers.

INSECTICIDES

TEXAS: A. J. Chapman, Brownsville, reported on June 17: "Where control measures are not being practiced, boll weevils and leafworms are taking a heavy toll of the cotton crop on both sides of the river. A shortage of calcium arsenate and toxaphene has developed and farmers are using most any kind of insecticide available in an attempt to stop the ravages of these pests."

ALABAMA: Glynn B. Wood and Clifford D. Porterfield report no immediate shortage of insecticides for cotton insect control. Three materials are being used by the farmers for boll weevil control: 20% toxaphene; the 3-5 mixture of gamma BHC-DDT; and calcium arsenate.

STATE REPORTS ON COTTON INSECT CONDITIONS

Reports on cotton insect conditions that give more information than it is feasible to include in this report are now being issued at weekly intervals in most of the cotton-growing States. In the preparation of these State survey reports there is close cooperation among the entomologists of the Experiment Stations, Extension Services, this Department, and other agencies. The reports issued in North Carolina, South Carolina, Georgia, Alabama, Mississippi, Louisiana, Texas, Arkansas, Oklahoma, and Arizona may be obtained by writing to the Experiment Stations or Extension Services in the States.

BOLL WEEVIL

NORTH CAROLINA: Cotton is rapidly reaching the squaring stage in all areas. Square infestation counts made in 48 unpoisoned fields in 13 counties averaged 48% punctured squares, the county averages ranging from 22 to 71%. This compares with an average of 9% punctured squares in 60 poisoned fields, the county averages ranging from 4 to 24% punctured squares. Boll weevils were found in 41 fields of unpoisoned young cotton in 9 counties at an average rate of 89 weevils per 100 plants as compared with an average of 37 weevils per 100 plants in 22 poisoned fields. Data so far this year indicate an all time high for numbers of weevils to survive the winter in the State.

SOUTH CAROLINA: Weather conditions continue favorable for cotton growth and weevil emergence. Sixty-one weevils emerged from the hibernation cages at Florence during the week ending June 24 making a total of 716 to date. This compares with 498 in 1949, 8 in 1948, and 147 in 1947.

Boll weevils continue to reach the early-planted trap plot of 1/5 acre at Florence in very large numbers. A total of 1,450 weevils were collected during the week ending June 24. The number removed during the week is greater than the total number removed each season in any year since the plot was started in 1938. The weevils collected in the trap plot through June 24 as compared with previous years are as follows:

Year	Weevils Collected	Year	Weevils Collected
1950	4,522	1946	315
1949	1,389	1945	537
1948	434	1944	139
1947	1,073	1943	502

Square infestation counts made in 95 unpoisoned fields in 19 counties averaged 61% punctured squares. In 12 fields the infestation ranged from 26 to 50%, and in 83 fields more than 50% of the squares were punctured. Infestation counts made in 43 poisoned fields in 18 counties averaged 14% punctured squares. In 4 of the fields less than 10% of the squares were punctured and in 39 fields the infestation ranged from 11 to 25%.

GEORGIA: Serious damage from boll weevils threatens most cotton areas of the State. Records show that more than two times as many weevils have survived the winter than ever previously recorded. In southern Georgia weevils have emerged in large numbers following each rainy spell. Infestations have averaged from 35 to 50% punctured squares or more where cotton has not been poisoned and reports from the Piedmont area show similar conditions exist there. Boll weevil infestation was found in 94 of the 96 fields examined in 30 southwest counties at an average rate of 20% punctured squares. No weevils were found in two fields in Lowndes and Sumter Counties. In 43 fields less than 10% of the squares were punctured; in 25 fields from 11 to 25%; in 18 fields from 26 to 50%; and in 8 fields more than 50% of the squares were punctured. The average infestation in 40 fields examined in 13 southeastern counties was 30% punctured squares. In 13 fields less than 10% of the squares were punctured; in 15 fields from 11 to 25%; in 6 fields from 26 to 50%, and in 6 fields more than 50% of the squares were punctured.

ALABAMA: Boll weevils were found in all of the 74 fields examined in 8 counties, Butler, Choctaw, Clarke, Conecuh, Escambia, Marengo, Monroe, and Wilcox, in the southeastern part of the State. Glynn B. Wood and Clifford D. Porterfield, who made the examinations, found only 7 fields, all in Wilcox county, that had less than 10% of the squares punctured. Eighteen of the fields, at least one in each county, had more than 50% of the squares punctured by boll weevils. The average infestation in all 74 fields examined in southeastern Alabama was 34% punctured squares. The examination of 272 squares collected on the ground revealed that 35%

of the squares contained live larvae. No weevils in the pupa stage were found.

TENNESSEE: Boll weevils were found in all of 13 fields examined in 4 counties at an average rate of 638 weevils per acre as compared with an average of 882 weevils last week in 23 fields in the same counties. Infestation counts made in 10 fields in Fayette, Hardeman, and Shelby Counties averaged 37% punctured squares, ranging from 14 to 58%.

MISSISSIPPI: Clay Lyle reported on June 26: "The weevil situation continued serious as 359 farms out of 385 examined in 41 counties by Board Inspectors and Federal Entomologists were found infested with an average of 688 weevils per acre on 41 farms where cotton was not yet squaring and 22% infestation average on 318 farms with fruiting cotton. This compares with 37% last week and 30% at this time last year. Outside the Delta the weevil infestations in unpoisoned fields are very high."

In 294 fields examined in 16 Delta counties, 270 were found to be infested with weevils. Some 288 of these fields had squares large enough for square infestation counts but in 6 fields no squares were present and weevil counts were made. Of the 288 squaring fields 268 averaged 18% punctured squares as compared with 16% last week and 19% a year ago. When all fields were considered the average square infestation, this and last year, was 17%. Two of the 6 fields examined in which no squares were present averaged 350 weevils per acre as compared with 280 last week when a much larger number of fields were examined and 96 weevils per acre a year ago.

LOUISIANA: Boll weevils continue to emerge in hibernation cages at Tallulah in fairly large numbers. The total emergence from May 1 to June 22 was 13.72%. The emergence for the week ending June 22 was 1.54%; for the week ending June 15, 1.80%, and for the week ending June 8, it was 1.94%. The emergence from May 1 to June 22 during the past 19 years is given in the following table:

Year	Boll Weevil Survival in Hibernation Cages from May 1 to June 22	Year	Boll Weevil Survival in Hibernation Cages from May 1 to June 22
	Percent		Percent
1950	13.72	1940	.02*
1949	4.00	1939	1.92
1948	.38*	1938	.76*
1947	1.54	1937	17.18
1946	8.82	1936	.12*
1945	14.46	1935	.48*
1944	2.12	1934	4.24*
1943	.94	1933	.40
1942	.08*	1932	13.04
1941	15.02		

*Emergence completed

Most cotton has been chopped and it is difficult to make boll weevil counts on much of the cotton because it is too large for plant examinations and is not far enough advanced for square infestation records. Boll weevils were found in 72 of the 92 fields of young cotton examined in 16 parishes at an average rate of 532 weevils per acre. The highest infestations, ranging from 1,080 to 2,250 per acre, were recorded in East Carroll, Grant, Madison, Richland, Tensas, Catahoula, and Bossier Parishes.

ARKANSAS: Dwight Isely wrote on June 20 that cotton may be a little later than last year, and that so far as the weevils are concerned the situation may be about the same as at this time last year except that the infestation extends much farther northward.

Boll weevils were found in 56 of the 76 fields examined in 6 southeastern counties at an average rate of 632 weevils per acre. All of the 4 fields examined in Little River County were infested at an average rate of 1,868 weevils per acre.

TEXAS: Boll weevils threaten the cotton crops in most areas of the State except in extreme west. The average infestation in 326 fields in 46 counties was 24% punctured squares. No weevils were found in 26 fields examined. In 122 fields less than 10% of the squares were punctured; in 56 fields 11 to 25%; in 70 fields from 26 to 50%; and in 52 fields more than 50% of the squares were punctured.

At Waco boll weevils continued to emerge from hibernation cages in small numbers. The percent emergence at this date as compared with previous years and total seasonal survival are shown in the following table:

Year	Seasonal survival as of June 23	Total seasonal survival, percent
1940	0.20	0.20
1941	21.22	21.32
1942	0.715	0.715
1943	0.225	0.225
1944	2.78	2.78
1945	3.40	3.42
1946	1.32	1.32
1947	0.18	0.18
1948	0.22	0.22
1949	0.06	0.06
1950	4.2	

OKLAHOMA: Most all cotton fields in the eastern part of the State that are now squaring are infested with weevils. In the examination of 109 fields in 15 counties weevils were found at an average rate of 360 per acre. The highest infestations observed were in Johnston, Love, Marshall, Choctaw, and McCurtain Counties.

COTTON LEAFWORM

TEXAS: Cotton leafworms have increased rapidly in portions of the Lower Rio Grande Valley and insecticides are being generally used for their control in parts of Cameron County and in scattered areas as far north as Corpus Christi in Nueces County.

Cotton leafworms were found in Zavala County on May 31 by H. C. Harvey, in Victoria County on June 13 by L. F. Greer, and in Jackson and Matagorda Counties on June 14 by L. F. Greer. They have also been reported in Hidalgo, Willacy, La Salle, and Goliad Counties. Those 8 counties and the 9 counties mentioned in the Second Cotton Insect Survey Report make a total of 17 counties in southern Texas that are known to be infested with the cotton leafworm.

COTTON APHIDS

ALABAMA: Aphids were found in 58 of the 74 cotton fields examined during the week ending June 24. In 9 of the fields the infestations were recorded as heavy, in 15 fields as moderate, and in 34 fields as light.

MISSISSIPPI: Aphids were noted in 13 of the 294 fields examined in 16 Delta Counties.

TENNESSEE: Aphids were reported in 7 of the 23 fields examined.

LOUISIANA: Aphid infestation was reported in some fields that had received early poison applications.

MISCELLANEOUS INSECTS

NORTH CAROLINA: George D. Jones, Extension Entomologist, reported June 23: "Thrips are numerous in many fields but disease and several other factors appear involved also. A few fields are being replanted to other crops. The thrip situation is improving somewhat as plants increase in size."

SOUTH CAROLINA: F. F. Bondy found the tobacco budworm, Heliothis virescens (Fabr.), on cotton in Marlboro County on June 19.

GEORGIA: Lepidopterous larvae or "worms" are reported as causing serious damage to cotton in Terrell, Tift, and other counties in southern Georgia. The reports indicate that these insects are serious in some of the fields on which insecticides have been applied for boll weevil control. No specimens have been received for determination.

ALABAMA: In 50 of the 74 cotton fields examined in Butler, Choctaw, Clarke, Conecuh, Escambia, Marengo, Monroe, and Wilcox Counties, cotton squares were infested or injured by lepidopterous larvae. This injury was similar or identical with injury caused by the bollworm, Heliothis armigera. The average infestation or the percent of squares injured by these insects in the infested fields was 8%. The percent of infestation or injury in one field in Choctaw County was 23% injured squares, and in two fields in Wilcox County 24% and 25% of the squares had been injured by "bollworms."

MISSISSIPPI: Clay Lyle reported on June 26: "Bollworms shared the spotlight with weevils in the cotton insect situation in Mississippi during the past week. Calls and specimens from many sections of the State indicated a rather general infestation of two species, the common bollworm or corn earworm, and the tobacco budworm, which is also a common pest on cotton."

LOUISIANA: Lepidopterous larvae were reported in scattered areas throughout the State. No serious damage was observed.

FLORIDA: On June 5 Dr. J. W. Wilson, Entomologist, Central Florida Experiment Station, Sanford, collected lepidopterous larvae that were abundant enough in the cotton fields to cause considerable injury to young squares. Part of these larvae were identified by J. G. Franclemont as the tobacco budworm, Heliothis virescens (Fabr.). Most of the larvae were identified by H. W. Capps as Platynota rostrana (Wlk.) of the family Tortricidae.

TEXAS: The May beetle, Phyllophaga cribrosa Lec., was reported by W. J. Spicer, of the Division of Grasshopper Control, as cutting the stems of young cotton plants just as they were sprouting in Haskell County on May 31. The determination was made by Dr. E. A. Chapin.

The white-lined sphinx, Celerio lineata (F.), was found by G. E. Orr on cotton in Dawson County on June 7. The determination was made by H. W. Capps.

The salt-marsh caterpillar, Estigmene acrea (Drury), was found on cotton in Nueces County on May 29, by B. M. Steele. Determination was made by H. W. Capps.

The beet armyworm, Laphygma exigua (Hbn.), was found on cotton in El Paso County, Texas, on May 10 by Q. A. Haro.

K. P. Ewing found cotton in McLennan County infested with the cowpoa aphid, *Aphis medicaginis* Koch, on May 22, and the larvae of a moth belonging to the genus *Acontia* probably *aprica* (Hbn.) of the family Phalaenidae on May 25.

On May 26, Q. A. Hare, Ysleta, El Paso County, collected aphids on cotton. Miss L.M. Russell found that five species were in this collection as follows: the cowpea aphid, *Aphis medicaginis* Koch; the potato aphid, *Macrosiphum solanifolii* (Ashm.); the green peach aphid, *Myzus persicae* (Sulz.); the corn root aphid, *Anuraphis maidi-radicis* (Forbes), and *Anuraphis middletonii* (Thos.). In this collection of five different species on cotton there was not a single specimen of the cotton aphid, *Aphis gossypii* Glov.

THE SUPPLY OF INSECTICIDES FOR COTTON INSECT CONTROL

It is probable that no one can do more than guess as to what the insecticide situation will be during August and September. Whether or not the boll weevil, bollworm, cotton leafworm, and other cotton insects occur in damaging numbers during July and August will depend upon the effectiveness of control by hot, dry weather, predacious and parasitic insects and other natural enemies, and extent to which insecticides are properly used for their control.

Representatives of the insecticide industry state that larger quantities of insecticides are now in the cotton-growing States than during any previous year. Some manufacturers are reported as operating 24 hours a day in order to meet the present and expected demand for insecticides during July and August.

Insecticides now widely used for cotton insect control, arranged alphabetically, are: aldrin, benzene hexachloride, calcium arsenate, chlordane, DDT, nicotine, sulfur, tetraethyl pyrophosphate, and toxaphene.

In News Letter No. 9603, issued by the Extension Service of Clemson College, South Carolina, on May 27 the following question and answer are noted:

> "Question. Why is a shortage of cotton insecticides expected this year?
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> "Answer. It would seem to anyone that, since the end of last season, sufficient cotton insecticides could have been manufactured in adequate quantities so that there would be enough insecticides for everybody during the 1950 cotton season. However, for several reasons, another shortage is expected this year. The first reason is that the manufacturers of the concentrates can make only a limited quantity before they fill up their warehouses. After that they must either shut down operations or divert the concentrates to other countries or areas.
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> "The blenders, upon receiving their supply of concentrates, can make only a limited quantity of the finished material before filling their warehouses. If the insecticides are slow moving to farms, then you can understand why a static situation would occur. Another reason for the expected shortage can be traced back to the coal strikes and railroad strikes. BHC, as you know, is a by-product of coal and none can be manufactured during the coal strike. Reports are coming in that a shortage of toxaphene dust is also expected. The reason for this is that toxaphene concentrate is going into the liquid insecticides used in spraying."

PREPARED JUNE 29, 1950.